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10/802,032	03/17/2004	Andrew Mark Nightingale	550-534	3472

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ARLINGTON, VA 22203

EXAMINER
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JANAKIRAMAN, NITHYA

ART UNIT	PAPER NUMBER
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2123

MAIL DATE	DELIVERY MODE
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03/23/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/802,032

**Applicant(s)**

NIGHTINGALE ET AL.

**Examiner**

NITHYA JANAKIRAMAN

**Art Unit**

2123

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11/26/08.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-46 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 January 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-893)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date \_\_\_\_\_

### **DETAILED ACTION**

This action is in response to the Pre-Appeal Brief filed on 11/26/08. The Final Rejection has been withdrawn and prosecution is reopened. All arguments submitted have been rebutted, however, the rejection has been modified. Claims 1-46 are presented for examination.

#### ***Response to Arguments- 35 USC § 112***

1. Applicant's arguments with respect to rejections under 35 U.S.C. 112, first paragraph have been fully considered and are persuasive. The rejections of claims 1-28 have been withdrawn.

#### ***Response to Arguments- 35 USC § 103***

2. Applicant's arguments filed 11/26/08 have been fully considered but they are not persuasive.

#### **Argument 1:**

3. Applicant argues on page 2 that neither Fischer nor Thekkath discloses "simulating the operation of a data processing apparatus".

4. Applicant states that "Thekkath does not disclose how any simulation is actually performed – only that it is possible to do a simulation". Column 5, lines 29-31 of Thekkath states "a computer program product for use in...simulating...an integrated bus master device". It is irrelevant whether the act of simulation is performed. If the prior art structure is capable of performing the intended use, it meets the claim. Rejection maintained.

#### **Argument 2:**

5. Applicant argues on page 3 that Fischer does not disclose “generating anticipated timing information by assuming that the data transfer will occur with exclusive access to the bus.”
6. Column 6, lines 65-67 through Column 7, lines 1-5 describe the need for avoiding bus contentions: "...it is possible for two or more devices to contend for bus resources by initiating a transaction at the same point in time. Consequently, arbitration logic **104** is incorporated into the system architecture to **preclude** bus contentions and to provide fair and timely access to the bus **112**". The entire point of Thekkath's invention assumes that data transfer will occur with exclusive access to the bus. Bus contention is an anomaly to be **prevented**. Rejection maintained.

**Argument 3:**

7. Applicant argues on page 3 that Thekkath does not disclose “determining whether the anticipated timing formation indicates that two or more concurrent data transfers would occur on the bus.”
8. Fischer teaches that continuous revisions take place to adjust for the transaction interference, or errors, of Thekkath in paragraph [0012], "Each slave node clock is continuously corrected compared with the master node clock to smooth slave clock error to an average of zero compared with the master clock as a reference in response to a message from the master node...Packets at slave nodes are then transmitted according to the determined future *best packet assembly time information*". This is Fischer's anticipated timing information. Fischer *anticipates* what *would be* the best future packet time information. Thekkath is concerned with avoiding bus contention, as shown above in column 6, lines 65-67 through column 7, lines 1-5 which describe the need for avoiding bus contentions: "...it is possible for two or more devices to

contend for bus resources by initiating a transaction at the same point in time. Consequently, arbitration logic **104** is incorporated into the system architecture to **preclude** bus contentions and to provide fair and timely access to the bus **112**". As stated in the Final Rejection, it is unclear if Applicant intends to imply that actual concurrent data transfers do occur or do not. The current claim language does not provide for concurrent data transfers. The claim states "**in the event** that the anticipated timing information indicates that two or more concurrent data transfers **would** occur on the bus, generating machine-readable revised timing information". Actual overlapping **does not** occur with this claim language, as the timing information is revised in **anticipation** of the overlap. Rejection maintained.

**Argument 4:**

9. Applicant argues on page 4 that Fischer and Thekkath do not disclose generating machine-readable revised timing information for those data transfers.
10. Applicant argues that the slave node clock of Fischer is not a correction of timing information for concurrent data transfers. Thekkath, not Fischer, is being used for the teaching of concurrent data transfers. As paragraph 12 of Fischer states, "Each slave node clock is continuously corrected compared with the master node clock to smooth slave clock error". Rejection maintained.

**Argument 5:**

11. Applicant argues on pages 4-5 that Fischer and Thekkath cannot be sensibly combined.
12. Applicant states that it would not be "sensible" to preclude bus concurrent data transfers using Thekkath for Fischer's network. The fact that Applicant has recognized a potential outcome of this combination (for example, people being cut off of Fischer's network), which

Applicant interprets as disadvantageous, is irrelevant. Motivations to combine need not be universal. Applicant also argues that Fischer is an externally connected, while Thekkath is an internal system. The Examiner also asserts that this is an irrelevant argument. It is possible to utilize techniques for micro systems and macro systems interchangeably. Rejection maintained.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. Claims 1-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Publication 2002/0163932, Fischer (hereinafter Fischer) in view of US Patent 6,393,500, Thekkath (hereinafter Thekkath), in view of US 5,140,680 Best (hereinafter Best).
19. Fischer discloses a method for transaction between a master device and a slave device, and continuously generating revised timing information for the data transactions over the network (see Abstract). However, Fischer does not simulate the transaction, nor does Fischer compensate for two or more concurrent transactions.
20. Thekkath discloses determining whether two or more data transfers occur over a bus, and provides for precluding bus contentions (see column 6, lines 57-67 and column 7, lines 1-5), as well as for simulating the bus/master device.

21. Fischer and Thekkath are analogous art because they are both related to the field of data transfers over a bus.

22. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the simulation of Thekkath with the bus transactions of Fischer because it is desirable to test and simulate for "a burst data transaction to be optimized...for efficient transfer over a bus" (see Thekkath, column 6, lines 14-25). It would also have been obvious to one having ordinary skill in the art at the time the invention was made to combine the provisions for bus contention of Thekkath with the method of transferring data over a bus of Fischer, because "If two devices were to execute a data transfer at the same time, then signals on the bus would be corrupted, thus precluding any transfer of data" (see Thekkath, column 1, lines 62-67), which is clearly undesirable to one of ordinary skill in the art.

23. Fischer also does not teach multiple master nodes and multiple slave nodes.

24. Best does teach "multiple master and slave devices sharing a digital data bus" (see Abstract).

25. Fischer and Best are analogous art as they are both related to the field of data transfers over a bus.

26. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the multiple masters and slaves of Best with the bus transaction of Fischer, motivated by the desire to "allow computer systems to operate at the optimum efficiency at all times rather than under constant worst case constraints" (Best, column 2, lines 19-21).

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## 27. Regarding claim 1, Fischer, Thekkath, and Best teach:

A method of simulating the operation of a data processing apparatus (*Thekkath, column 5, lines 29-37*) to determine timing information of data transfers, the data processing apparatus comprising a number of master logic units and slave logic units coupled via a bus (*Best, Abstract, "multiple master and slave devices sharing a digital data bus"*), the data processing apparatus being operable to perform the data transfers between the master logic units and the slave logic units over the bus (*Fischer, paragraph [0012], "master node", "slave node"*), the method comprising the steps of:

a) generating anticipated timing information for each successive data transfer over the bus by assuming that each successive data transfer can occur with exclusive access to the bus (*Fischer teaches that timing information is determined for each data transfer in paragraph [0012], "Best packet assembly times for packets to be transmitted by the particular slave node to the master node in the future in order for the packets to be received by the master node at future master clock referenced best arrival times"*);

b) determining whether the anticipated timing information indicates that two or more concurrent data transfers would occur on the bus (*Thekkath teaches that transaction interference on a bus would be avoided by detecting what would be the capability of a bus and adjusting accordingly using arbitration logic, column 5, lines 1-10, "The transaction control logic varies burst width according to the burst transaction capability"; column 7, lines 1-5, "...preclude bus contentions and to provide fair and timely access to the bus for all initiating devices"*); and

c) in the event that the anticipated timing information indicates that two or more concurrent data transfers would occur on the bus (*Thekkath teaches the detection of transaction interference in column 7, lines 1-5, using arbitration logic*), generating machine-readable revised timing information for those data transfers for use in correcting said anticipated timing information as part of simulation output results, the revised timing information being generated using bus status information until those data transfers have been completed (*Fischer teaches that continuous revisions take place to adjust for the transaction interference, or errors, of Thekkath in paragraph [0012], "Each slave node clock is continuously corrected compared with the master node clock to smooth slave clock error to an average of zero compared with the master clock as a reference in response to a message from the master node...Packets at slave nodes are then transmitted according to the determined future best packet assembly time information"*).

## 28. Regarding claim 2, Fischer, Thekkath, and Best teach:

The method as claimed in claim 1, wherein the step a) further comprises the step of generating anticipated timing information for each successive data transfer between one master logic unit and one slave logic unit over the bus to which that master logic unit and that slave logic unit have exclusive access (*Fischer, paragraph [0012], "Best packet assembly times for packets to be*



*transmitted by the particular slave node to the master node in the future in order for the packets to be received by the master node at future master clock referenced best arrival times").*

29. Regarding claim 3, Fischer, Thekkath, and Best teach:

The method as claimed in claim 1, wherein the anticipated timing information comprises a data transfer window indicative of the time during which that data transfer will occur over the bus (*Fischer, paragraph [0012], "Best packet assembly times for packets to be transmitted by the particular slave node to the master node in the future in order for the packets to be received by the master node at future master clock referenced best arrival times")*).

30. Regarding claim 4, Fischer, Thekkath, and Best teach:

The method as claimed in claim 1, wherein the anticipated timing information comprises data transfer commencement information indicative of the time at which that data transfer will commence on the bus and data transfer completion information indicative of the time at which that data transfer will complete on the bus (*Fischer, paragraph [0012], "Best packet assembly times for packets to be transmitted by the particular slave node to the master node in the future in order for the packets to be received by the master node at future master clock referenced best arrival times")*).

31. Regarding claim 5, Fischer, Thekkath, and Best teach:

The method as claimed in claim 1, wherein each data transfer comprises the transfer of a number of data values over the bus and the anticipated timing information comprises data value transfer information indicative of the time at which each data value will be transferred over the bus (*Fischer, paragraph [0012], "A best arrival time for the reception by the master node of each particular packet transmitted by each particular slave node is determined at the master node")*).

32. Regarding claim 6, Fischer, Thekkath, and Best teach:

The method as claimed in claim 1, wherein the step b) further comprises the step of comparing the anticipated timing information for each successive data transfer to determine whether two or more concurrent data transfers would occur on the bus (*Thekkath, column 7, lines 1-5*).

33. Regarding claim 7, Fischer, Thekkath, and Best teach:

The method as claimed in claim 6, wherein the step b) further comprises the step of determining whether two or more concurrent data transfers would occur on the bus by determining whether the anticipated timing information indicates that one data transfer will not complete prior to another data transfer commencing (*Thekkath, column 7, lines 1-5*).

34. Regarding claim 8, Fischer, Thekkath, and Best teach:

The method as claimed in claim 1, wherein the step c) further comprises the step of generating bus status information indicative of the status of the bus during at least a period when the anticipated timing information indicates that two or more concurrent data transfers would occur on the bus (*Thekkath, column 7, lines 1-5*).

35. Regarding claim 9, Fischer, Thekkath, and Best teach:

The method as claimed in claim 8, wherein the bus status information includes information indicative of which master logic unit/slave logic unit pair have access to the bus at any point in time during at least the period (*Fischer, paragraph [0055]*).

36. Regarding claim 10, Fischer, Thekkath, and Best teach:

The method as claimed in claim 8, wherein the step c) further comprises the step determining from the generating bus status information which of those data transfers will occur on the bus at any point in time during at least the period (*Fischer, paragraph [0055]*).

37. Regarding claim 11, Fischer, Thekkath, and Best teach:

The method as claimed in claim 9, wherein the step c) further comprises the step of generating revised timing information indicative of the time during which each of those data transfers occur over the bus (*Fischer, paragraph [0012], Best packet assembly times for packets to be transmitted by the particular slave node to the master node in the future in order for the packets to be received by the master node at future master clock referenced best arrival times*”).

38. Regarding claim 12 (29 and 46), Fischer, Thekkath, and Best teach:

A method of simulating the operation of a data processing apparatus (*Thekkath, column 5, lines 29-37*) using a software model to determine timing information of data transfers (*Fischer, paragraph [0493], “The simulation models a master clock jitter...”*), the data processing apparatus comprising a number of master logic units and slave logic units coupled via a bus (*Best, Abstract, “multiple master and slave devices sharing a digital data bus”*), the data

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processing apparatus being operable to perform the data transfers between the master logic units and the slave logic units over the bus (*Best, Abstract, "multiple master and slave devices sharing a digital data bus"*), the method comprising the steps of:

- a) in response to an indication that a data transfer is to occur, generating data transfer information indicative of the data transfer using a master logic unit model and a slave logic unit model (*paragraph [0012], "Best arrival times for packets transmitted from slave nodes to the master node are communicated from the master node to the slave nodes"*);
- b) generating anticipated timing information from the data transfer information using the master logic unit model and the slave logic unit model, the anticipated timing information being generated by assuming that the data transfer will occur with exclusive access to the bus (*Fischer teaches that timing information is determined for each data transfer in paragraph [0012], "Best packet assembly times for packets to be transmitted by the particular slave node to the master node in the future in order for the packets to be received by the master node at future master clock referenced best arrival times"*);
- c) determining from the anticipated timing information whether two or more concurrent data transfers will occur on the bus (*Thekkath teaches that transaction interference on a bus would be avoided by detecting what would be the capability of a bus and adjusting accordingly using arbitration logic, column 5, lines 1-10, "The transaction control logic varies burst width according to the burst transaction capability"; column 7, lines 1-5, "...preclude bus contentions and to provide fair and timely access to the bus for all initiating devices"*); and
- d) in the event that it is anticipated that two or more concurrent data transfers will occur on the bus (*Thekkath teaches the detection of transaction interference in column 7, lines 1-5, using arbitration logic*), generating machine-readable revised timing information for those data transfers using the master logic unit model and the slave logic unit model, the revised timing information being generated by modelling the status of the bus during at least the period when it is anticipated that two or more concurrent data transfers will occur (*Fischer teaches that continuous revisions take place to adjust for the transaction interference, or errors, of Thekkath in paragraph [0012], "Each slave node clock is continuously corrected compared with the master node clock to smooth slave clock error to an average of zero compared with the master clock as a reference in response to a message from the master node...Packets at slave nodes are then transmitted according to the determined future best packet assembly time information"*).

39. Regarding claim 13 (and 30), Fischer, Thekkath, and Best teach:

The method as claimed in claim 12, wherein the data transfer information includes information indicative of the type and size of data transfer (*Fischer, paragraph [0009]*).

40. Regarding claim 14 (and 31), Fischer, Thekkath, and Best teach:

The method as claimed in claim 12, wherein the step b) comprises generating anticipated timing information comprising timing values generated by the master logic unit model and the slave logic unit model indicative of the time during which that data transfer will occur over the bus (*Fischer, paragraph [0012], "Best arrival times for packets transmitted from slave nodes to the master node are communicated from the master node to the slave nodes"*).

41. Regarding claim 15 (and 32), Fischer, Thekkath, and Best teach:

The method as claimed in claim 12, wherein the step b) comprises generating anticipated timing information comprising data transfer commencement information using the master logic unit model, the data transfer commencement information being indicative of the time at which that data transfer will commence on the bus and generating data transfer completion information using the slave logic unit model, the data transfer completion information being indicative of the time at which that data transfer will complete on the bus (*Fischer, paragraph [0012], "Packets at slave nodes are then transmitted according to the determined future best packet assembly time information"*).

42. Regarding claim 16 (and 33), Fischer, Thekkath, and Best teach:

The method as claimed in claim 12, wherein each data transfer comprises the transfer of a number of data values over the bus and the step b) comprises generating anticipated timing information comprising data value transfer information indicative of the time at which each data value will be transferred over the bus (*Fischer, paragraph [0012], "Best arrival times for packets transmitted from slave nodes to the master node are communicated from the master node to the slave nodes"*).

43. Regarding claim 17 (and 34), Fischer, Thekkath, and Best teach:

The method as claimed in claim 12, wherein the step c) further comprises the step of comparing the anticipated timing information for each successive data transfer using an arbiter model to determine whether two or more concurrent data transfers would occur on the bus (*Thekkath, column 7, lines 1-5*).

44. Regarding claim 18 (and 35), Fischer, Thekkath, and Best teach:

The method as claimed in claim 17, wherein the step c) further comprises the step of determining whether two or more concurrent data transfers would occur on the bus by determining whether the anticipated timing information indicates that one data transfer will not complete prior to another data transfer commencing (*Thekkath, column 7, lines 1-5*).

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45. Regarding claim 19 (and 36), Fischer, Thekkath, and Best teach:  
The method as claimed in claim 12, further comprising the step of: generating a transaction including the data transfer information (*Fischer, paragraph [0012]*).

46. Regarding claim 20 (and 37), Fischer, Thekkath, and Best teach:

The method as claimed in claim 19, wherein the steps a) and b) comprise the steps of:

generating master data transfer information and master anticipated timing information from the data transfer information using a master logic unit model;

storing the master data transfer information and the master anticipated timing information in the transaction;

passing the transaction to the slave logic unit model;

generating slave data transfer information and slave anticipated timing information from the data transfer information using a slave logic unit model; and

storing the slave data transfer information and the slave anticipated timing information in the transaction (*Fischer, paragraph [0012]*).

47. Regarding claim 21 (and 38), Fischer, Thekkath, and Best teach:

The method as claimed in claim 19, wherein the step c) further comprises the steps of:

passing the transaction to an arbiter model; updating a bus allocation table with the anticipated timing information in the transaction (*Fischer, paragraph [0012]*);

determining from the bus allocation table whether two or more concurrent data transfers are anticipated to occur (*Thekkath, column 7, lines 1-5*).

48. Regarding claim 22 (and 39), Fischer, Thekkath, and Best teach:

The method as claimed in claim 19, wherein in the event that it is anticipated that two or more concurrent data transfers will occur the step d) further comprises the step of:

causing each master logic unit model and slave logic unit model associated with the two or more concurrent data transfers to initialise timing models operable to simulate bus signals generated by each of the corresponding master logic units and slave logic units (*Best, Abstract, "multiple*

*master and slave devices sharing a digital data bus") on a clock cycle by clock cycle basis (Fischer, paragraph [0012]).*

49. Regarding claim 23 (and 40), Fischer, Thekkath, and Best teach:

The method as claimed in claim 22, wherein in the event that it is anticipated that two or more concurrent data transfers will occur the step d) further comprises the steps of:

setting a current clock cycle from which the bus signals are to be simulated;

initialising the timing models based on the current clock cycle and using anticipated timing information within the transactions associated with the two or more concurrent data transfers (*Fischer, paragraph [0012]*).

50. Regarding claim 24 (and 41), Fischer, Thekkath, and Best teach:

The method as claimed in claim 22, wherein in the event that it is anticipated that two or more concurrent data transfers will occur the step d) further comprises the step of:

determining, using an arbiter model and based on the simulated bus signals, which of the master logic unit models and slave logic unit models will be allocated access to the bus during any particular clock cycle (*Fischer, paragraph [0012]*).

51. Regarding claim 25 (and 42), Fischer, Thekkath, and Best teach:

The method as claimed in claim 24, wherein in the event that it is anticipated that two or more concurrent data transfers will occur the step d) further comprises the step of:

signaling the master logic unit models and slave logic unit models with the outcome of the determination (*Fischer, paragraph [0012]*).

52. Regarding claim 26 (and 43), Fischer, Thekkath, and Best teach:

The method as claimed in claim 25, wherein in the event that it is anticipated that two or more concurrent data transfers will occur the step d) further comprises the step of:

on receipt of a signal indicating to a master logic unit model or slave logic unit model that access to the bus has been granted, generating the revised timing information indicative of the actual clock cycles over which the data transfer occurred (*Fischer, paragraph [0012]*).

53. Regarding claim 27 (and 44), Fischer, Thekkath, and Best teach:

The method as claimed in claim 22, wherein once the revised timing information has been generated for two or more concurrent data transfers, simulating bus signals generated by each of the corresponding master logic units and slave logic units (*Best, Abstract, "multiple master and slave devices sharing a digital data bus"*) on a clock cycle by clock cycle basis is suspended (*Fischer, paragraph [0012]*).

54. Regarding claim 28 (and 45), Fischer, Thekkath, and Best teach:

The method as claimed in claim 12, wherein in the event that it is anticipated that two or more concurrent data transfers will not occur, the step d) further comprises the step of:

causing the associated master logic unit model and slave logic unit model to remain inactive for the period of the data transfer (*Fischer, paragraph [0508]*).

- The Examiner would like to point out that while only certain citations have been given, Applicant should consider the reference in its entirety.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NITHYA JANAKIRAMAN whose telephone number is (571)270-1003. The examiner can normally be reached on Monday-Thursday, 8:00am-5:00pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached on (571)272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nithya Janakiraman/  
Examiner, Art Unit 2123

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Supervisory Patent Examiner,  
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